

REMARKS

This is a response to the Office Action dated June 5, 2003. The Office rejected therein pending claims 1-40. Applicants herein cancel claims 1-25 and 27-40, without prejudice or disclaimer. With the entry of this amendment, claim 26 is now pending. Applicants earnestly and respectfully request reconsideration and allowance of pending claim 26.

Common Ownership under 35 U.S.C. §103(c)

Applicants wish to thank the Examiner for his reminder of the obligation to point out the inventor and invention dates of each claim in the case of a lack of common inventorship at the time a later invention was made. Nonetheless, to otherwise simplify the issue, there is only one claim pending (claim 26). Accordingly, the §103(c) issue is moot.

Rejections under 35 U.S.C. §103(a)

The Office rejected claims 1-40 as obvious over Livak et al. (U.S. 5,945,284) in view of a number of other references. Specifically, claims 1-11, 13-21, 26-28, and 34-40 were rejected over Livak in view of Effenhauser et al. (Analytical Chemistry, 1997) and Gilbert et al. (U.S. 6,368,699). Claim 12 was rejected over Livak, Effenhauser, and Gilbert, in further view of Kester (U.S. 6,225,567). Claims 22, 24, and 25 were rejected over Livak, Effenhauser, and Gilbert in further view of Williams (U.S. 6,232,075). Claim 23 was rejected over Livak, Effenhauser, Gilbert, and Williams in further view of Köster (U.S. 6,140,053). Claim 29 was rejected over Livak, Effenhauser, and Gilbert in further view of Clark et al. (U.S. 6,242,528). Claims 30-32 were rejected over Livak, Effenhauser, Gilbert, and Clark in further view of Batz et al. (U.S. 6,225,052). And claim 33 was rejected over Livak, Effenhauser, Gilbert, Clark, and Batz in further view of Liu (U.S. 6,165,694).

Applicants herein cancel claims 1-25 and 27-40, without prejudice or disclaimer, and respectfully traverse the rejection directed towards claim 26, the only remaining pending claim.

Rejection of claim 26 should be withdrawn as the Livak-Effenhauser-Gilbert references fail to teach or suggest a limitation of the claim

The Office rejected claim 26 as obvious over a combination of the Livak, Effenhauser, and Gilbert references. Applicants respectfully submit, however, that there is no *prima facie case* of obviousness because neither Livak, nor Effenhauser, nor Gilbert teaches or suggests a limitation of this claim. M.P.E.P. 2142. Specifically, independent claim 26 recites “a polyelectrolyte multiplayer (PEM),” which cannot be found in either the Livak, Effenhauser, or Gilbert reference.

The Office contended that “Livak et al teach a method wherein the substrate is glass and the surface is coated with a polyelectrolyte multilayer terminated with a polyanion (Column 8, lines 19-42).” Action at page 5.

With all due respect, however, a careful read of the indicated sections in Livak, shows no teaching of a polyelectrolyte multilayer. For example, column 8, lines 26-29 provide: “Several methods are available for covalently linking polynucleotides to solid supports, e.g., through reaction of a 5’-amino polynucleotide with an isothiocyanate-functionalized glass support.” Column 8, lines 38-42 provide: “Thus, the PC primer may contain a member of a specific binding pair, e.g., biotin, or a reactive moiety which can react with a functionalized solid support to form a covalent linkage, e.g., a 5’-amino group which reacts with a an (sic) isothiocyanate-functionalized glass support.” These statements describe directly linking a polynucleotide to a glass support, by a single covalent linkage and in no way teach or suggest the “polyelectrolyte multilayer (PEM)” of claim 26.

As taught in the instant specification, PEM formation proceeds by the sequential addition of polycations and polyanions, which are polymers with many positive or negative charges, respectively. Specification at page 29, lines 32-33. Far from creating multilayers of polymers with many positive or negative charges, Livak describes single, covalent linkages that would involve one layer and no charge. Accordingly, Livak fails to supply the “polyelectrolyte multilayer (PEM)” limitation of independent claim 26.

Effenhauser and Gilbert, the other two references relied upon in rejecting claim 26, cannot cure this deficiency either alone or in combination with Livak. Gilbert focuses on using multilayer films to tailor indices of refraction for desired optical properties, and

nowhere discusses surface chemistry to facilitate polynucleotide attachment. Effenhauser is about microchips for integrated capillary electrophoresis. It broadly states that “there exists an arsenal of surface modification methods that can be easily transferred from conventional CE to planar chips” (page 3451, right column), but also notes that “all experiments described in this work were performed with PDMS casts without any modification of the channel walls” (page 3454, left column). Moreover, it teaches nothing of polyelectrolyte multilayers.

As neither Livak, nor Effenhauser, nor Gilbert teach or suggest “polyelectrolyte multilayer (PEM),” there can be no combination of these three references that provide each and every limitation of claim 26, required for a *prima facie* case of obviousness. Accordingly, for at least this reason, Applicants respectfully request reconsideration and withdrawal of the obviousness rejection of claim 26.

Further, Applicants do not address the Office’s further arguments built upon the alleged but insufficient Livak-Effenhauser-Gilbert combination. However, in doing so, Applicants in no way acquiesce to any of the Office’s contentions.

CONCLUSION

Applicants submit that the present application is in condition for allowance, and earnestly and respectfully request timely allowance of pending claim 26.

The Commissioner is authorized to charge any additional fees, which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 30260.702.501).

Respectfully submitted,
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